

IN THE CLAIMS:

1. An apparatus for testing the tensile load bearing properties of an uncured prepreg composite material, the apparatus comprising:
 - (j) a housing comprising a cavity sized for at least partially containing an uncured prepreg sample to be tested;
 - (k) an expandable bladder at least partially contained in the housing; and
 - (l) a block located at least partially within the housing and interposed between the bladder and the cavity for containing an uncured prepreg sample to be tested, the block urged towards the cavity to apply pressure to the sample when the apparatus is in use.
2. The apparatus of Claim 1, further comprising a heater located at least partially within the housing for controlled heating of the sample to be tested, when the apparatus is in use.
3. The apparatus of Claim 1, wherein the cavity comprises four surrounding walls, three of the walls comprised of inner sides of the housing and a fourth wall comprised of a side of the block, the side of the block applying pressure to a sample in the cavity, when the bladder is inflated and the apparatus is in use.
4. The apparatus of Claim 2, further comprising release film interposed between the block and an uncured prepreg sample to be tested, and between the heater and the sample to be tested, when the apparatus is in use, to prevent adhesion of the sample to the block or the heater, respectively.
5. The apparatus of Claim 1, wherein the housing is substantially rectangular in longitudinal cross section and substantially rectangular in horizontal cross section, the interior of the housing comprising a longitudinal cavity for receiving an uncured prepreg sample to be tested.

6. The apparatus of Claim 5, wherein the bladder comprises first and second opposing faces, and wherein the bladder is disposed adjacent one side of the housing such that the first face of the bladder extends substantially coextensively along that side, when the bladder is inflated.
7. The apparatus of Claim 6, further comprising a block within the housing, the block comprising first and second opposing sides, the second side of the block extending substantially coextensively with the second face of the bladder, when the bladder is inflated; the first side of the block defining a boundary of the cavity, and the second side of the block in pressure transmitting communication with the second face of the bladder, the block urged by the bladder towards the cavity as the bladder is inflated to thereby apply pressure to a sample in the cavity, when the apparatus is in use.
8. The apparatus of Claim 1, wherein the heater comprises heating tape.
9. The apparatus of Claim 8, further comprising at least one thermocouple in proximity to of an uncured prepreg sample to measure a temperature of the sample when the apparatus is in use.
10. An apparatus for testing the tensile load bearing properties of a sample of an uncured prepreg composite material, the apparatus comprising:
 - (a) a substantially rectangular housing comprising an internal cavity for receiving a sample to be tested;
 - (b) a bladder comprising first and second opposing faces, the bladder located within the housing adjacent one inner side of the housing such that the first face of the bladder extends substantially coextensively along that one inner side, when the bladder is inflated;
 - (c) a substantially rectangular block within the housing, the block comprising first and second opposing sides, the second side of the block extending

substantially coextensively with the second face of the bladder, when the bladder is inflated; the first side of the block defining a wall of the cavity, and the second side of the block in pressure transmitting communication with the second face of the bladder, the block urged by the bladder towards the cavity, as the bladder is inflated, to thereby apply pressure to a sample in the cavity, when the apparatus is in use.

11. The apparatus of Claim 10, further comprising a heater for applying controlled heat to a sample in the cavity, when the apparatus is in use.
12. The apparatus of Claim 10, further comprising at least one thermocouple located to measure a temperature of a sample, when the apparatus is in use.
13. A method of testing a property of an uncured prepreg sample, the method comprising:
 - (a) selecting an uncured prepreg sample to be tested;
 - (b) preparing the sample, including optionally applying a release film to the sample;
 - (c) subjecting the sample to heat and pressure in an apparatus comprising : a housing sized for at least partially containing the sample to be tested; an expandable bladder at least partially contained in the housing, the bladder applying controlled pressure against a block which in turn transmits applied pressure to the sample; and a heater configured to supply controlled heat to the sample;
 - (d) measuring a temperature of the sample;
 - (e) applying tensile force to the sample; and
 - (f) determining the tensile load at which the sample yields.
14. The method of Claim 13, wherein the applying of heat comprises applying heat to raise sample temperature to from about 100 to about 350°F.

15. The method of Claim 13, wherein the applying of tensile force comprises applying from about 50 psi to about 2000 per inch.
16. The method of Claim 13, wherein the preparing of the sample comprises: cutting the sample to size, applying a release film to the sample, wrapping the release film-covered sample in heating tape, and applying an outer release film to prevent adhesion of the sample to the block.
17. The method of Claim 13, wherein the measuring comprises measuring temperature with a thermocouple adjacent or in contact with the sample.
18. The method of Claim 13, wherein the prepreg sample comprises filler material selected from continuous, discontinuous, woven, or nonwoven fiber.
19. The method of Claim 13, wherein the applying of tensile force comprises applying force at opposed ends of the sample when the sample is at a desired temperature and pressure.